MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/2020

BBF3124 – FINANCIAL DERIVATIVES
(All Sections/Groups)

13 MARCH 2020
9.00 a.m – 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 5 pages with 4 Questions and 1 Cumulative Normal Distribution Table only.

2. Attempt all **FOUR** questions. The distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

QUESTION 1

(a) As comparable to the stock market, derivative market seems to be attractive to speculators. Evaluate **FOUR (4)** reasons why speculators prefer derivative market.

(8 marks)

(b) Due to the global slowdown, Malaysia is expected to have a lower GDP in the 2nd quarter of 2020. Given that the maintenance margin for the account is 75% and initial margin is 20%, the available investment amount for Mr. Keith is RM 80,000. Below is the variation of closing price.

Date	Price
02/03/2020	1550
03/03/2020	1560
04/03/2020	1565
05/03/2020	1540

(i) Construct the most appropriate strategy including number of contracts for Mr. Keith.

(8 marks)

(ii) Prepare the mark to market table for the above variation of prices. Is there a margin call? Determine the total profit/loss on last day of trading on 05/03/2020.

(9 marks)

(Total: 25 marks)

QUESTION 2

(a) As the market is expecting the phase one, partial deal of the trade war between China and United States to be signed off soon, the interest rate is expected to hike in the next couple of months. As the professional trader, you are expected to take position in the market in order to gain profit from the expectation. Below is the latest available information.

Quotation:
3-month KLIBOR = 6.50%
June KLIBOR futures = 92.50

(i) Construct the most appropriate strategy and justify your strategy.

(4 marks)

(ii) Show the estimated profits from the futures if the interest rate goes up by 2.00%. It is assumed that KLIBOR futures will converge at the maturity.

(5 marks)

(b) Due to unrest Hong Kong protest, Mr. Sim, a professional trader believes that the market is not priced correctly. The following details as shown below:

Current market data are as follows:
90 days KLIBOR rate : 7.20%
180 days KLIBOR rate : 8.50%
180 days KLIBOR futures: 90.50

It is expected that the KLIBOR futures will converge at the maturity. Assume that Mr. Sim can borrow or lend RM1,000,000.

(i) Evaluate how Mr. Sim is able to determine whether an arbitrage exists. Determine the correct price.

(6 marks)

(c) Suppose you observe the following quotations today.

3-month SIF price = 1658
Index value = 1589
Borrowing cost = 5.50% per annum
Dividend yield = 2.0%
Time to maturity of SIF = 90 days

(i) Calculate the "fair value" of the 3-month SIF contract price. How much is the contract value?

(4 marks)

(ii) Determine the mispricing. Construct the strategy based on the mispricing and calculate the estimated profit/loss from the strategy in the derivate market based on 1 contract.

(6 marks)

(Total: 25 marks)

QUESTION 3

The active hedger, Mr. Smith is expecting the price of AXE Berhad to go down but not substantially. He intended to profit from the expectation of price movement but unwilling to expose himself to large potential losses if the stock price goes against his expectation. The following 90 day call options on AXE Berhad Corporation are available.

AXE BERHAD RM 4.50 Call @ 0.75
AXE BERHAD RM 5.50 Call @ 0.10

(a) Using these calls, illustrate how Mr. Smith establish the bear call spread. Justify the used strategy.

(5 marks)

(b) Prepare the payoff table and payoff graph based on the strategy above. Indicate maximum profit and limited loss in both table and graph. Breakeven point should be shown as well.

(20 marks)

(Total: 25 marks)

QUESTION 4

(a) "Nestle (Malaysia) Bhd posted a net profit of RM148.99 million for the third quarter ended Sept 30, 8.2% higher than the RM137.69 million posted in the previous corresponding quarter, thanks to higher margins. Revenue for the quarter, however, decreased 2.2% to RM1.4 billion, from RM1.43 billion. Nestle also declared an interim dividend of 70 sen per share amounting to RM164.15 million for the quarter, which will be paid on Dec 19, 2019." (SUNBIZ, 12 November 2019).

    (i) Following the above news posted, the call value for the Nestle (Malaysia) Bhd is significantly affected. Evaluate the possible changes on the call value after the announcement made and state the reason for the changes based on call intrinsic value.

(4 marks)

    (ii) Evaluate the changes on call value after the dividend payment made by Nestle (Malaysia) Berhad.

(4 marks)

(b) MAX Berhad is now trading at RM 6.50 per share and the exercise price of its 3-month calls with RM 4.80 exercise price on the stock is available. The risk free rate of interest expected to prevail is 3.8% per annum while estimate of the underlying stock volatility is 0.5. Using Black Scholes Option Pricing Model, calculate the call value.

(17 marks)

(Total: 25 marks)

Table: Cumulative Normal Distribution

d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)
-3.00	.0013	-1.58	.0571	-0.76	.2236	0.06	.5239	0.86	.8051	1.66	.9515
-2.95	.0016	-1.56	.0594	-0.74	.2297	0.08	.5319	0.88	.8106	1.68	.9535
-2.90	.0019	-1.54	.0618	-0.72	.2358	0.10	.5398	0.90	.8159	1.70	.9554
-2.85	.0022	-1.52	.0643	-0.70	.2420	0.12	.5478	0.92	.8212	1.72	.9573
-2.80	.0026	-1.50	.0668	-0.68	.2483	0.14	.5557	0.94	.8264	1.74	.9591
-2.75	.0030	-1.48	.0694	-0.66	.2546	0.16	.5636	0.96	.8315	1.76	.9608
-2.70	.0035	-1.46	.0721	-0.64	.2611	0.18	.5714	0.98	.8365	1.78	.9625
-2.65	.0040	-1.44	.0749	-0.62	.2676	0.20	.5793	1.00	.8414	1.80	.9641
-2.60	.0047	-1.42	.0778	-0.60	.2743	0.22	.5871	1.02	.8461	1.82	.9656
-2.55	.0054	-1.40	.0808	-0.58	.2810	0.24	.5948	1.04	.8508	1.84	.9671
-2.50	.0062	-1.38	.0838	-0.56	.2877	0.26	.6026	1.06	.8554	1.86	.9686
-2.45	.0071	-1.36	.0869	-0.54	.2946	0.28	.6103	1.08	.8599	1.88	.9699
-2.40	.0082	-1.34	.0901	-0.52	.3015	0.30	.6179	1.10	.8643	1.90	.9713
-2.35	.0094	-1.32	.0934	-0.50	.3085	0.32	.6255	1.12	.8686	1.92	.9726
-2.30	.0107	-1.30	.0968	-0.48	.3156	0.34	.6331	1.14	.8729	1.94	.9738
-2.25	.0122	-1.28	.1003	-0.46	.3228	0.36	.6406	1.16	.8770	1.96	.9750
-2.20	.0139	-1.26	.1038	-0.44	.3300	0.38	.6480	1.18	.8810	1.98	.9761
-2.15	.0158	-1.24	.1075	-0.42	.3373	0.40	.6554	1.20	.8849	2.00	.9772
-2.10	.0179	-1.22	.1112	-0.40	.3446	0.42	.6628	1.22	.8888	2.05	.9798
-2.05	.0202	-1.20	.1151	-0.38	.3520	0.44	.6700	1.24	.8925	2.10	.9821
-2.00	.0228	-1.18	.1190	-0.36	.3594	0.46	.6773	1.26	.8962	2.15	.9842
-1.98	.0239	-1.16	.1230	-0.34	.3669	0.48	.6844	1.28	.8997	2.20	.9861
-1.96	.0250	-1.14	.1271	-0.32	.3745	0.50	.6915	1.30	.9032	2.25	.9878
-1.94	.0262	-1.12	.1314	-0.30	.3821	0.52	.6985	1.32	.9066	2.30	.9893
-1.92	.0274	-1.10	.1357	-0.28	.3897	0.54	.7054	1.34	.9099	2.35	.9906
-1.90	.0287	-1.08	.1401	-0.26	.3974	0.56	.7123	1.36	.9131	2.40	.9918
-1.88	.0301	-1.06	.1446	-0.24	.4052	0.58	.7191	1.38	.9162	2.45	.9929
-1.86	.0314	-1.04	.1492	-0.22	.4129	0.60	.7258	1.40	.9192	2.50	.9938
-1.84	.0329	-1.02	.1539	-0.20	.4207	0.62	.7324	1.42	.9222	2.55	.9946
-1.82	.0344	-1.00	.1587	-0.18	.4286	0.64	.7389	1.44	.9251	2.60	.9953
-1.80	.0359	-0.98	.1635	-0.16	.4365	0.66	.7454	1.46	.9279	2.65	.9960
-1.78	.0375	-0.96	.1685	-0.14	.4443	0.68	.7518	1.48	.9306	2.70	.9965
-1.76	.0392	-0.94	.1736	-0.12	.4523	0.70	.7580	1.50	.9332	2.75	.9970
-1.74	.0409	-0.92	.1788	-0.10	.4602	0.72	.7642	1.52	.9357	2.80	.9974
-1.72	.0427	-0.90	.1841	-0.08	.4681	0.74	.7704	1.54	.9382	2.85	.9978
-1.70	.0446	-0.88	.1894	-0.06	.4761	0.76	.7764	1.56	.9406	2.90	.9981
-1.68	.0465	-0.86	.1949	-0.04	.4841	0.78	.7823	1.58	.9429	2.95	.9984
-1.66	.0485	-0.84	.2005	-0.02	.4920	0.80	.7882	1.60	.9452	3.00	.9986
-1.64	.0505	-0.82	.2061	0.00	.5000	0.82	.7939	1.62	.9474	3.05	.9989
-1.62	.0526	-0.80	.2119	0.02	.5080	0.84	.7996	1.64	.9495		
-1.60	.0548	-0.78	.2177	0.04	.5160						

This table shows the probability [N(d)] of observing a value less than or equal to d. For example, as illustrated, if d is -.24, then N(d) is .4052.

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